

REMARKS

In the Office Action, the Examiner initially objected to the oath or declaration originally filed by the applicant. Specifically, the Examiner indicated that the original oath included the statement that the applicant acknowledged a duty to disclose information “material to the examination” when the declaration required the phrase to state that information is being disclosed that is “material to patentability”. A substitute declaration executed by both of the inventors indicating that the information submitted to the USPTO was all the information known by the inventors to be “material to patentability” is submitted herewith.

In the Office Action, the Examiner indicated that claim 1-12, 18, 19, 24 and 25 were allowed over the prior art identified by the Examiner. The applicant hereby acknowledges and appreciates such finding by the Examiner.

In the Office Action, claim 23 was rejected under 35 USC §102(b) as being anticipated by the Kearns U.S. Patent No. 4,387,722. By the present response, claim 23 has been cancelled from the present application such that the rejection under §102(b) has been rendered moot.

In the Office Action, claims 13-17, 20-22 and 26-35 were rejected under 35 USC §103(a) as being anticipated by the Kearns ‘722 patent in combination with the Rohde U.S. Patent No. 5,876,351. The applicant assumes the Examiner intended to reject these claims based upon the combination of the Kearns ‘722 and Rohde ‘351 references under §103, rather than §102(b) as set forth on page 3 of the Office Action.

Reconsideration of the above claim rejections is respectfully requested in view of the foregoing claim amendments, as well as the following arguments for allowance.

Claim 13

By the present response, independent claim 13 has been amended to indicate that the apparatus includes a third electrode that is configured to both eliminate or reduce a common mode voltage present in signals obtained from the first and second electrodes

and to provide a second conductive path with one of the first and second electrodes.

Claim 13 has also been amended to indicate that the processing circuit is configured to detect fluctuations and impedance in the first or second conductive path and to derive a respiration signal from the fluctuation.

In the reasons for allowance included in the outstanding Office Action, the Examiner indicated that the second conductive path between one of the first and second electrodes and the third electrode was not taught or suggested by any of the references cited by the Examiner. Based upon these comments made by the Examiner in the Office Action and the amendments made to claim 13, independent claim 13 is now believed to be in condition for allowance.

Claims 14-17, 20-22 depend directly or indirectly from claim 13 and are thus also believed to be allowable.

Claim 26

By the present response, independent claim 26 has been amended to indicate that the first electrode is configured to be fixed onto the thorax of a human on the left leg at the LL location or on the right leg at the RL location. Further, claim 26 requires the second electrode to be fixed below the armpit on an opposite side of the thorax as the first electrode for sensing body impedance and to thereby define a conductive path extending through a lower portion of the lungs between the first and second electrodes for sensing impedance. Claim 26 further requires a means for monitoring respiration that is configured to detect fluctuations in impedance in the conductive path between the first and second electrodes. This amendment generally combines the subject matter of original claims 26, 28, 29 and 30.

As taught in the specification of the present application, the position of the first and second electrodes is selected as described such that the conductive path extends across the thorax and through a lower portion of the lungs. This impedance path is particularly desirable to monitor the respiration rate of a patient when the patient is using

abdominal breathing, such as when the patient is unconscious. Since the conductive path passes over the lower portion of the lungs, this conductive path is an improvement over prior sensing techniques that utilize electrode placement across the upper portion of a patient's lungs.

In the Kearns '722 reference cited by the Examiner, the disclosure teaches the bipolar configuration of a set of electrodes E1 and E2 where each of the electrodes are placed over the sixth intercostals space on opposite sides of the thorax. (See col. 13, lines 29-43.) Although the electrodes E1 and E2 are positioned generally beneath the armpit over the six intercostals space, these electrodes are generally aligned with each other on opposite sides of the thorax. Thus, the first and second electrodes in the Kearns '722 reference do not teach a conductive path that extends through a lower portion of the lungs, as is required by claim 26. Specifically, claim 26 requires the first electrode to be fixed to the thorax on either the left leg or the right leg and the second electrode to be fixed generally below the armpit on the opposite side of the thorax. Clearly, the Kearns reference does not teach this location of the first and second electrodes or the conductive path created by the placement of these electrodes.

In rejecting claims 28-30, which have generally been incorporated into claim 26, the Examiner relied upon the Rohde '351 reference to show that a means for sensing may be connected to the patient's leg. As the Examiner correctly indicated, the placement of an ECG electrode on the patient's right or left leg is well known to one of ordinary skill in the art. However, independent claim 26 requires the placement of the first electrode on the right or left leg of the patient to be part of a conductive path that is utilized for monitoring the respiration rate of a human. The positioning of one of the two electrodes that defines the conductive path for sensing body impedance to monitor respiration rate on the leg is not taught or suggested by either the Rohde '351 or Kearns '722 references relied upon by the Examiner.

As described previously, the Kearns '722 reference teaches that both of the electrodes E1 and E2 are disposed over the sixth intercostals space. Thus, both the E1

and E2 electrodes are positioned under the armpits on the thorax. There is no teaching or suggestion in the Kearns '722 reference of utilizing the left leg location or the right leg location as part of the conductive path for respiration rate monitoring. Instead, the Kearns '722 reference teaches what is the known measurement option, namely positioning the first and second electrodes across the chest of the patient, as described in ¶ [0006] of the present application.

Likewise, although the Rohde '351 reference shows positioning an ECG electrode on one leg of a patient, there is no teaching or suggestion of utilizing an electrode placed on a leg of a patient to define one half of a conductive path that is utilized for monitoring the respiration rate of a human, as is required by claim 26.

Since neither of the references cited by the Examiner, either alone or in combination, teach the specific positioning of the first and second electrodes to define the conductive path as required by claim 26, independent claim 26 is allowable over the combination of references cited.

Claims 27, 31-36 depend directly or indirectly from claim 26 and are also believed to be allowable based upon the above arguments for allowance, as well as in view of the subject matter of each claim.

Conclusion

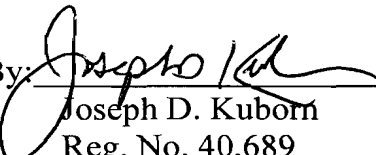
Based upon the Examiner's previous comments in the Office Action, claims 1-12, 18, 19, 24 and 25 have been allowed. Based upon the above arguments for allowance and claim amendments, claims 13-17, 20-22, 26-27 and 31-36 are also believed to be in condition for allowance.

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The Examiner is invited to contact the applicant's undersigned attorney with any questions or comments, or to otherwise facilitate prosecution of the present application.

Respectfully submitted,

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